



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,392	02/03/2005	Akira Akasaka	264741US2PCT	3897

22850 7590 02/03/2010  
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER
----------

ELVE, MARIA ALEXANDRA

ART UNIT	PAPER NUMBER
----------	--------------

3742

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

02/03/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com  
oblonpat@oblon.com  
jgardner@oblon.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/523,392	<b>Applicant(s)</b> AKASAKA ET AL.	
	<b>Examiner</b> M. Alexandra Elve	<b>Art Unit</b> 3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,2,5-7 and 9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-7 and 9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

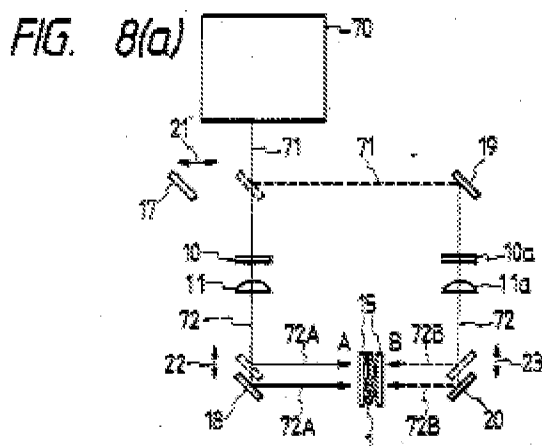
### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 & 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Usui et al. (USPN 4,931,616) in view of Arai et al. (USPAP 2002/0040893A1) and Kaji (USPAP 2003/0116545A1).

Usui et al. discloses a laser system (output 1 MW) and process for material removal in which a pulsed laser beam moves along one of two optical pathways. The optical pathway used is dependent on the position of a mirror (17). The mirror (17) may be positioned in the optical pathway using a parallel shift (21) (see figure 8a).



Usui et al. does not disclose the energy distribution of the laser, change of the distribution used in material removal or the mirror during a laser off-time.

Art Unit: 3742

Arai et al. discloses a laser system which uses spatial top hat distributions using a homogenizer. Diameters (alteration of distribution) and energy densities are adjusted independently. Arai et al. switches the optical pathway between laser 1 and laser 2, using an acousto-optical deflector (6). Laser voltage may be turned off and on throughout the processing. One laser has a lower energy density. Figures 18 a & b show the use of an aperture (mask equivalent) and the spatial energy distribution using a beam homogenizer along the optical path. Energy densities, spatial energy distributions, and beam diameters of the laser beam are adjusted individually. The first and second laser beams are obtained by switching optical paths and optical elements arranged along the optical paths adjust the energy densities, spatial energy distributions and beam diameters individually; that is, using an aperture (mask equivalent) and/or a homogenizer.

It would have been obvious to one of ordinary skill in the art at the time of the invention to control energy distributions, diameters and use homogenization as taught by Arai et al. in the Usui et al. because it allows for the uniform removal of differing materials.

Kaji discloses laser heating of prepreg prior to cutting. The cutting of prepreg may follow deviating pathways and hence the laser may have to shift from side to side of the cutting wheel (see figures). The laser system has a shutter (8) which allows the laser beam to be emitted or blocked from the prepreg. The shutter is used in the shifting of the laser beam from one side to another side of the cutting blade. The shutter

Art Unit: 3742

simplifies the system and ensures that the laser beam is applied to the correct area of the prepreg prior to cutting.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Usui et al. to incorporate a shutter as taught by Kaji because this ensures that the beam is only applied to the appropriate area and additionally, allows for ease in the transitioning from one beam path to another.

Claims 5-6 & 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Usui et al., Arai et al. and Kaji, as stated above and further in view of Jain et al. (USPN 6,621,044).

Usui et al., Arai et al. and Kaji disclose the use of a homogenizer, an aperture and a shutter, but not specifically the use of a mask.

Jain et al. discloses a dual laser beam system and process. Beam shaping optics and a homogenizer are used to create a desired beam shape that is uniform. The homogenizer may also incorporate a mask.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Usui et al., Arai et al. and Kaji to incorporate a mask, as taught by Jain et al. because it is a functional equivalent of the aperture.

***Response to Arguments***

Applicant's arguments filed 10/8/09 have been fully considered but they are not persuasive.

Applicant argues that the off-time of a laser is not taught. The examiner respectfully notes that Kaji discloses the use of a shutter to block or emit the laser beam.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Alexandra Elve whose telephone number is 571-272-1173. The examiner can normally be reached on 7:30-4:00 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu B. Hoang can be reached on 571-272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3742

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

January 31, 2010.

/M. Alexandra Elve/  
Primary Examiner, Art Unit 3742